XXXIX. *Aſtronomical Obſervations made at* Cavan, *near* Strabane, *in the County of* Donegal, Ireland, *by Appointment of the Royal Society, by Mr.* Charles Maſon.

Read November 7, 1770.

Equal Altitudes of the Sun and Stars.

1769 April	Time per Clock of the equal Altitudes of the ☉'s limbs, and of ✱'s.		Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.	☉'s Limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✱ paſſed the merid. from the mean of the Obſervations.
	h ′ ″		° ′		
☽ — 3	7 51 11½	1ſt wire	64 56	Arcturus	
	54 45	middle wire			
	58 15—	3d or laſt wire			
	7 30 7		59 20	Ditto.	
	33 41+				
	37 14—				
	9 20 14		72 40	Spica	
	25 36				
	31 1½				
♂ — 4	7 47 46		64 56	Arcturus	
	51 19				
	54 49+				
	8 26 43			Ditto	
	30 17½				
	33 49½				
		h ′ ″			
	9 16 49	2 41 59	72 40	Spica	
	22 11				
	27 37+	31 11½			11 59 23,3
	9 43 35+	2 15 10	70 15	Ditto	
	49 49	8 56+			
	56 11	2 35			

Equal Altitudes of the Sun and Stars.

1769 April	Time per Clock of the equal Altitudes of the ☉'s limbs, and of ✳'s.		Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.	☉'s Limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✳ paſſed the Merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☿ — 5	8 23 16½ 26 50 30 21½		59 20	Arcturus.	
	9 13 23 18 47 24 11—	2 38 30 33 7 27 41	72 40	Spica	
	9 40 8+ 46 23½ 52 44—	2 11 44+ 5 30+ 1 59 9	70 15	Ditto	11 55 56,5
♄ — 8	9 36 6½	middle wire	70 15	Spica	
☽ — 10	9 11 30 Clouds 21 12½	2 18 16½ Clouds 8 33	44 55	☉'s upp. limb	
	21 33 26 32½	2 8 13½ 3 14½	54 55	☉'s low. limb	11 44 33,5
	9 34 36 Clouds 45 31½	1 55 15 Clouds Clouds	52 35	☉'u pp. limb	
	51 38	1 38 7:	Ditto	☉'s low. limb.	
	8 6 9+ 9 44½ 13 16		59 20	Arcturus	
	9 23 3 29 16 35 38	1 54 35 Clouds 1 42 0	70 15	Spica	11 38 49,0
☿ — 12	7 59 18½ 8 2 53 6 25		59 20	Arcturus	

Equal Altitudes of the Sun and Stars.

April 1769	Time per Clock of the equal Altitude of the ☉'s Limbs, and of *'s.		Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.	☉'s Limb, and Stars obſerved.	Time of Clock when the ☉'s cent. and * paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☿ —12	8 49 25+	Cloudy at the time correſponding	72 40	Spica	
	54 46				
	9 0 13—				
♃ —20	7 47 1	3 47 46	62 36	☉'s upp. limb.	
	50 50½	43 59			
	54 33½	40 16—			
	8 6 27½	3 28 24	60 00	Ditto	
	10 17½	24 29			
	14 11	20 38½			
	8 31 58½	3 2 48½	56 42	Ditto	
	36 6	3 58 44			
	40 9—	54 38½			
	44 32½	2 50 19		☉'s lower limb	
	7 35 23		59 20	Arcturus	
	38 56				
♀ —21	7 28 23		59 20	Arcturus	11 1 3,4
	31 58+				
	35 30				
	7	2 7 28::	75 5	Sipca	
	7 59 31	2 35			
	8 4 22½	1 57 43½			
	8 18 28½	1 43 39—	72 40	Ditto	
	23 52	1 38 16			
	29 18—				
♄ —22	8 45 48		48 12	Arcturus	
	49 48				
	53 44:				
	10 2 37		39 25	Ditto	
	8 7—				
	13 44				

Equal Altitudes of the Sun and Stars.

1769 April	Time per Clock of the equal Altitudes of the ☉'s limb, and of ✳'s.		Zen. diſtance of points on the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✳ paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
♂—25	8 35 33::		48 12	Arcturus	
	39 27				
	43 25				
	8 52 53		46 00	Ditto	
	57 2				
	9 1 11				
	9 52 17		39 25	Ditto	
	57 48—				
	10 3 25				
☿—26	8 49 29+	2 22 11	46 00	Arcturus	
	53 39	18 1½			
	57 47½	13 53			
	9 48 57		39 25	Ditto	11 35 50,2
	54 28				
	10 0 5				
♀—28	8				
	8 46 47		46 00	Arcturus	
	50 52::				
	9 7 51	1 50 4	43 00	Ditto	11 28 57,3
	12 26	45 29			
	16 59	40 55			
	9 42 5		39 25	Ditto	
	47 35				
	53 12				
☉—30	12 5 9		40 51	Arcturus	*N.B.* This day I ſcrewed the bob of the pendulum 7 revolutions and 17 diviſions (of the nut) and ſet the clock at noon to nearly ſidereal time.
	10 11				
	15 19				
	12 23 11½		39 5	Ditto	
	28 52½				
	34 40::				

Equal Altitudes of the Sun and Stars.

1760 May	Time per Clock of the equal Altitude of the ☉'s limb, and of ✱'s.		Zen. diſtance of points on the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✱ paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☽ — 1	12 12 9 50½ 14 57		40 51	Arcturus	
♂ — 2	12 4 26 9 28 14 32 : :		40 51	Arcturus	
	12 28 9+ 33 57		39 5	Ditto	
☿ — 3	12 4 4 9 5½ 14 11	16 7 14 16 2 11+ 15 57 5½	40 51	Arcturus	14 5 38,9
	12 27 46 33 36	15 43 32 37 43½	39 5	Arcturus	
♄ — 6	12 2 55+ 7 58 13 3½		40 51	Arcturus	
	12 20 58 26 38 32 27−		39 5	Ditto	
☿ —10	12 39 28½ 25 9 30 58	Cloudy at the time correſponding	39 5	Arcturus	
☽ —15	12 17 40 23 19 29 9	Clouds Clouds 15 33 15	39 5	Arcturus	14 1 12,0
♃ —18	11 58 30 12 3 31 8 37+	16 1 40 15 56 41 :	40 51	Arcturus	14 0 5,0
☿ —24	1 2 58 7 3 11 4½	6 54 38− 50 33+ Clouds	46 24	☉'s upp. limb	

Equal Altitudes of the Sun and Stars.

1766 May	Time per Clock of the equal Altitudes of the ⊙'s limb, and of ✱'s.		Zen. diſtance of points on the limb of the quadt. the nonius was ſet at.	⊙'s limb, and Stars obſerved.	Time per Clock when the ⊙'s cent. and ✱ paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☿—24	1 21 4	Clouds			3 58 39,2
	25 23½	6 32 10½	44 10	⊙'s upp. limb	
	29 40	6 27 55			
	1 34 16½	6 23 19½		⊙'s low. limb	
☿—31	0 4 30	8 44 40			
	8 7	41 4	56 58	⊙'s upp. limb	4 24 27,0
	11 39	37 30			
	15 22½	33 48½		⊙'s low. limb	
	12 45 40	The ⊙'s laſt limb ſet over a hill, at the diſtance of about 3½ or 4 miles.			
	14 46 10—				
	49 44		38 17		
	53 14+				
	15 12 47				
	16 24—	Cloudy	4 28	Ditto	
	19 56				
	15 36 15+	Clouds			
	39 51 :	19 42·45	18 20	γ Draconis a ✱ 2d mag. merid. z. d. 3 19 38 ::	
	43 19½	39 16			
	49 8½	19 33 27			17 41 17,5
	52 42	29 53	16 29	Ditto	
	56 11	26 23			
June ♃— 1	0 14 38	Cloudy at the times correſponding t teſe.			
	18 14½		55 57	⊙'s upp. limb	
	21 47				
	25 30			Ditto low. limb	
	0 30 10				
	33 49½ :		53 45	⊙'s upp. limb	
	37 27½				
	41 14			Ditto low. limb	

Equal Altitudes of the Sun and Stars.

1769 June	Time per Clock of the equal Altitudes of the ☉'s limb, and of *'s.		Zen. diſtance of points on the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and * paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	°		
♃ — 1	1 6 31½			☉'s upp. limb	
	10 20		48 45		
	14 8 :			Ditto low. limb	
	18 5				
	21 12½	Cloudy at the time-correſponding to theſe			
	25 9		46 48	☉'s upp. limb	
	29 2½				
	33 10½			Ditto low. limb	
	2 4 53½			☉'s up. limb	
	9 25		41 23		
	13 56—			Ditto low. limb	
	18 41				
	Cloudy with rain at night.				
♀ — 2	23 28 24	9 35 41 ::			
	31 58½	32 6½	62 59	☉'s upp. limb	
	35 30	28 35			
	23 39 11	Clouds		☉'s low. limb	
	23 55 11	9 8 53			
	58 45+	5 17	59 9	☉'s upp. limb	
	0 2 16½	1 46			
	0 6 0	8 58 7½		☉'s low. limb	
	0 16 40 :	8 47 22½			4 31 53,5
	20 15	43 45+	56 5	☉'s upp. limb	
	23 50	Clouds			
	27 33½	Clouds		☉'s low. limb	
	38 38½	Clouds			
	42 19	8 21 39	52 59	☉'s upp. limb	
	Clouds	8 18 5½			
	49 44			☉'s low. limb	

Equal Altitudes of the Sun and Stars.

1769 June	Time per Clock of the equal Altitudes of the ☉'s limb, and of *'s.		Zen. diſtance of points on the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and * paſſed the merid. from the mean of the Obſervations.
	h ' "	h ' "	° '		
♀ — 2	1 0 0	Cloudy			
	1ſt wire clou.	8 1 58½	49 45	☉'s upp. limb	
	1 5 48½	7 58 11			
	9 31	5 54 27			
	13 28			☉'s low. limb	
	Clo. 1ſt wire		47 00	☉'s upp. limb	
	1 26 30				
	30 25::				
	1 56 28	Cloudy at the times correſponding to theſe	42 43	☉'s upp. limb	
	Clouds				
	2 17 56½				
	22 37				
	27 18		40 13	☉'s upp. limb	
	32 17½			☉'s low. limb	
	12 54 30::	The ☉'s laſt limb ſet.			
	Cloudy all night.				
	20 25	Cloudy with rain.			
♄ — 3	0 16 47	8 54 43	56 30	☉'s upp. limb	
	20 23	Clouds			
	23 57:	8 47 35::			
	Then cloudy				
	0 31 27½	Clouds	54 25	☉'s upp. limb	
	35 6	Clouds			
	38 40½	8 32 51:			
	42 27	Clouds		☉'s low. limb	
	0 46 50½	Clouds	52 16	☉'s upp. limb	
	Clouds	Clouds			
	54 10—	8 17 18½			

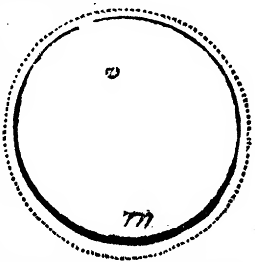
Equal Altitudes of the Sun and Stars.

1769 June	Time per Clock of the equal Altitudes of the ☉'s limb, and of ✱'s.		Zen. diſtance of points on the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✱ paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
♄ — 3	0 54 19 57 58½	Clouds Clouds	☉'s low. middle wire Ditto laſt wire		4 35 37,8
	1 4 43 8 28 12 11½		49 48	☉'s upp. limb	
	16 5+			Low. limb laſt wire	
	1 22 2 Clouds Clouds	Clouds Clouds 7 41 43	47 28	☉'s upp. limb	
	1 33 47	7 37 40		☉'s low. limb	
	Clouds Clouds 1 50 46	So hazy that I could not ſee the ☉'s limb at time correſpon.	44 47	☉'s upp. limb	
	55 00	7 16 25 :		☉'s low. limb	
	2 0 2 : Clouds Clouds	Clouds 7 9 7 2 54½	42 38	☉'s upp. limb	
	3 1 00 6 55 13 4	Clouds 6 4 25 Clouds	36 9	☉'s upp. limb	
	Then cloudy				

Though the air at external contact was not quite ſo clear as at ſome times I have ſeen, yet the ſun's limb appeared well defined, and the ſpots in the diſk very ſtrong, their edges keen and diſtinct. At the internal contact, the air was much changed, and the limb of Venus ſeemed to cohere to the Sun's limb, by a protuberance that appeared like a dark ſhade: which ſeemed to prevent my ſeeing the thread of light for about 40″ longer than I expected.

1769 June	Time per Clock of the equal Altitudes of the ☉'s limb, and of ✻'s.		Zen. diſtance of points of the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✻ paſſed the merid. from the mean of the Obſervations.
♄ — 3	h ′ ″	h ′ ″	° ′		

Equal Altitudes of the Sun and Stars.



When the planet was upon the ☉'s diſk, there appeared a faint light ſhade (having a gentle fluctuating motion) round its periphery, and wideſt on that part fartheſt on the Sun's diſk: it appeared as per fig. the black circle repreſenting the periphery of Venus, and the dotted one that of the ſhade, which was very regular and well defined; *v* the upper, and *m* the lower part of the planet: and the whole ſhade was apparently of equal brightneſs.

	14 45 2½ 48 38 52 13:		38 17	α Lyræ	
	15 11 39+ 15 16½ 18 48+		34 28	Ditto	
	22 15	Cloudy with rain			
	40	Cloudy			
	49 28	The eclipſe of the ſun began			
	49 35	Very plain			
	52	Cloudy with rain			
	23 28	The clouds began to break; and from this time to 23^h 54′ I endeavoured with a micrometer (of Mr. Dollond's conſtruction) to get meaſurements for determining the digits eclipſed; but was ſo interrupted by flying clouds, that nothing could be done with certainty; then cloudy with rain till the end of the eclipſe was paſt.			
☉ — 4	Cloudy				
☽ — 5	14 44 19 47 51:: 51 23		38 17	α Lyræ	

Equal Altitudes of the Sun and Stars.

1769 June	Time per Clock of the equal Altitudes of the ☉'s limb, and of ✱'s.		Zen. diſtance of points of the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✱ paſſed the merid. from the mean of the Obſervations.
	h ' "	h ' "	° '		
☽ — 5	15 10 56 14 31½ 18 5		34 28	α Lyræ	
☿ — 7	14 43 32½ 47 6 50 36		38 17	α Lyræ	
☉ — 11	14 42 4 45 37+ 49 8		38 17	α Lyræ	
♄ — 15	Wound up the clock				
☿ — 21	14 41 54 45 25—		38 17	α Lyræ	
☉ — 25	16 25 45 29 59 34 15	Cloudy at the time correſponding to theſe	23 22	α Lyræ	
♀ — 30	2 30 23 34 5— 37 43½	Clouds Clouds 9 57 7 : :	51 23	☉'s upp. limb	
	41 31			☉'s low. limb	
	2 45 29 49 14 Clouds	9 49 24 9 45 38— Clouds	49 18	☉'s upp. limb	
	14 49 35½	☉'s laſt limb ſet			6 17 28,9
	— — —				
	16 14 3— 18 5	Cloudy at the time correſponding	25 6	α Lyræ	
	16 23 53 28 8 32 24—		23 22	Ditto	

Equal Altitudes of the Sun and Stars.

1769 July	Time per Clock of th equal Altitudes of the ☉'s limb, and of ✱'s.		Zen. diſtance or points of the limbs of the quadt. the nonius was ſet at.	☉'s limb, an Stars obſerved.	Time per Clock vhen the ☉'s ent. and ✱'s paſ-ed the merid. rom the mean of he Obſervations.
	h ′ ″	h ′ ″	° ′		
♄ — 1	3 25 22½	9 17 1	44 33	☉'s upp. limb	
	3 29 22	13 0:			
	Clouds	Clouds			
	30 40 17	Clouds	42 40	Ditto	
	Clouds	8 57 51			
	48 37	Clouds			
	16 9 39½		25 6	α Lyræ	
	Clouds				
	Clouds				
☽ — 3	16 8 53	Cloudy at thetime corresponding.	25 6	α Lyræ	
	12 54½				
	16 55				
	22 45—		23 22	Ditto	
	27 0—				
	31 14½				
♃ — 6	2 12 20	11 7 21+	57 30	☉'s upp. limb	
	15 56	3 44½			
	19 29	0 13+			
	23 10+	10 56 31½		☉'s low. limb	
	26 51	10 52 49::	55 26	☉'s upp. limb	6 39 56,8
	30 29½	49 13			
	34 3½	45 39+			
	37 46	41 55½		☉'s low. limb	
♀ — 7	16 11 24		25 6	α Lyræ	
	15 24				
	16 21 15—		23 22	Ditto	
	25 29				
	29 45				

Eqnal Altitudes of the Sun and Stars.

1769 July	Time per Clock of the equal Altitudes of the ☉'s limb, and of *'s.		Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and *'s paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☉—16	Wound up the Clock				
☽—17	4 44 15	Clouds	43 45	☉'s upp. limb	
	48 34	9 52 17—			
	52 54	47 59			
	57 27½	43 24½		☉'s low. limb	
	5 1 56	9 38 55	41 12	☉'s upp. limb	7 20 33,5 high wind
	6 32—	34 14 :			
	Clouds	Clouds			
	5 16 8	9 24 42		☉'s low. limb	
♀—21	16 2 4		25 6	α Lyræ	
	6 6				
	10 6½				
	16 15 56½		23 22	Ditto	
	20 11				
	24 26½				
♄—22	3 41 45½	11 35 12+	55 6	☉'s upp. limb	
	45 27	31 32—			
	49 4	27 53			
	49 15	27 42		☉'s low. limb middle wire	
	52 54½	11 24 4		Ditto 3^{d} or laſt wire	
	3 56 48½	11 20 9½	53 1	☉'s upp. limb	7 38 40,2
	4 0 35	16 25			
	Clouds	12 42 : :			
	4 16 47½	11 0 11½	50 50	☉'s upp. limb	
	4 20 47	10 56 23½		☉'s low. limb	
	24 37+	10 52 23		Ditto	
	16 1 42½		25 6	α Lyræ	
	5 43½				
	9 44—				

Equal Altitudes of the Sun and Stars.

1769 July	Time per Clock of the equal Altitudes of the ☉'s limb, and of ✳'s.						Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.		☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✳'s paſſed the merid. from the mean of the Obſervations.
	h	′	″	h	′	″	°	′		
♄—22	16	15	33½				23	22	α Lyræ	
		19	49—							
		24	4							
♂—25	16	0	33				25	6	α Lyræ	
		4	35½							
		8	35½							
		14	25				23	22	Ditto	
		18	40							
		22	25							
♄—29	15	59	4				25	6	α Lyræ	
	16	3	3½::							
		7	5							
	Then cloudy									
Auguſt ☉— 6	4	2	35+	12	59	58½	62	30	☉'s upp. limb	
		6	13½		56	21				
		9	46+		52	46+				
		9	57		52	36			☉'s low. limb	
		13	33	12	49	1			Ditto	8 31 34,0
	4	18	36	12	43	58+	60	15	☉'s upp. limb	Very high winds
		22	17	Clouds						
		25	54	12	36	42				
		29	42+	12	32	53			☉'s low. limb	
☽— 7	Clouds						23	22	α Lyræ	
	Clouds									
	16	17	59							
☿— 9							23	22	α Lyræ	
	16	17	15+							

Equal Altitudes of the Sun and Stars.

1769 April	Time per Clock of the equal Altitudes of the ☉'s limb, and of *'s.		Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.	☉'s Limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and *'s paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☿ — 9	17 25 24½		25 45	α Cygni	
	29 00—				
	32 32				
	37 43½		24 00	Ditto	
	41 21				
	44 56				
☿ — 16	17 22 49		25 45	α Cygni	
	26 25—				
	29 57				
	17 35 7½		24 00	Ditto	
	38 44½				
	42 20+				
♄ — 17	17 51 17—	21 57 23	21 41	α Cygni	
	54 58½	53 41½			
	58 38	50 2½			
	18 4 23		19 53	Ditto	19 54 20,0
	8 9½				
	11 55				
☽ — 21	17 49 47—	Cloudy at the time correſponding.	21 41	α Cygni	
	53 28				
	57 8—				
	18 2 52		19 53	Ditto	
	6 39				
	10 24				
♃ — 24	17 19 47½	Cloudy at the time correſponding.	25 45	α Cygni	
	23 22½				
	26 25—				
	Clouds				
	18 5 30		19 53	Ditto	
	9 17½				

Equal Altitudes of the Sun and Stars.

1769 Auguſt	Time per Clock of the equal Altitudes of the ☉'s limb, and of ✱'s.		Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✱'s paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☉—27	Clouds 17 22 15½ Clouds		25 45	α Cygni	
	Clouds 17 34 36 38 11—		24 00	Ditto	
	23 30	Saw a Comet near			
Sept. ♀— 1	Saw the aforementioned Comet through a thick haze; it was moved to the eaſtward.				
♃— 7	Clouds Clouds 17 21 40		25 45	α Cygni	
	17 26 52 Clouds 34 2½	Rain in the night	24 00	Ditto	
☉—10	Cloudy with rain till about half paſt 4 in the morning, when the clouds broke in the eaſt, and I ſaw the Comet a little to the ſouth of Procyon; its tail extended nearly to the belt of Orion, and made a ſplendid appearance. Cloudy and rain in 8′ after.				
☽—11	Wound up the clock				
♀—15	17 23 53+ 27 32— 31 6	22 3 3+ 21 59 26— 21 55 50½	24 00	α Lyræ	
	17 40 25:: 44 8 Clouds	— — — 21 42 50 — — —	21 41	Ditto	19 43 28,5
	19 54 59½ 58 46— 2 32—	21 31 58+ 21 28 10+	19 41	Ditto	

Equal Altitudes of the Sun and Stars.

1769 Sept.	Time per Clock of the equal Altitudes of the ⊙'s limb, and of ✳'s.		Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.	⊙'s limb, and Stars obſerved.	Time per Clock when the ⊙'s cent. and ✳'s paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☽—18	17 22 46 26 24+ 29 59		24 00	α Cygni	
☿—20	17 53 5½ 56 53½ 18 0 39		19 41	α Cygni	
	Clouds 18 9 37½ Clouds		18 00	Ditto	
♃—21	8 10 33 15 20½ 20 9:	13 54 51 50 4½ 45 16	63 48	⊙'s upp. limb	
	20 26 25 21	44 59— 40 6½		⊙'s low. limb Ditto	11 3 5,6
	8 32 44: : 38 8 43 27	13 32 36 Clouds Clouds	61 30	⊙'s upp. limb	
	43 46 49 15	Clouds		⊙'s low. limb	
	17 52 43 56 33½ 18 0 17½		19 41	α Cygni the ✳ fluttered	
	18 5 20½ 9 15½ 13 10		18 00	Ditto.	
♀—29	9 9 9 14 54 20 45	13 47 59 Clouds Clouds	63 24 Very thick and hazy	⊙'s upp. limb	
	Clouds 18 6 15 19 10	Cloudy at the time correſponding to theſe	18 00	α Cygni	

3

Equal Altitudes of the Sun and Stars.

1769 Sept.	Time per Clock of the equal Altitudes of the ☉'s limb, and of ✱'s.						Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.		☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✱'s paſſed the merid. from the mean of the Obſervations.
	h	′	″	h	′	″	°	′		
♀—29	—	—	—							
	8	15	24	Cloudy at the time corresponding to theſe			16	50	Ditto	
		19	28							
	18	26	14½							
		30	39				15	00		
		35	3½							
	18	53	8	—	—	—				
		57	52	20	18	39	12	14		19 38 15,5
	19	4	1	Cloudy						
♄—30	8	40	12	14	23	27½				
		45	10		18	34	66	55	☉'s upp. limb	
		50	5		13	37				
		50	24	14	13	17½			☉'s low. limb	
		55	27		8	16			Ditto	
	9	3	34	14	0	8				
		9	3	13	54	40	64	35	☉'s upp. limb	11 32 14,4
		14	32		49	4				
	9	9	18	13	54	25				
		14	55	13	48	43			Ditto low. limb	
		20	41		43	2:				
	18	19	7	20	56	39	16	50	α Cygni	
	18	25	52½	20	49	53+				
		30	14		45	30	15	00	Ditto	
		34	41		41	5				19 37 52,7
☿ Oct 4	9	18	33	14	11	15½				
		24	12	—	—	—	65	50	☉'s upp. limb	—
		29	53	13	59	58				
		24	29	—	—	—				
		30	16		59	32			☉'s low. limb.	11 45 17,6
		36	7		53	37 ::				

Equal Altitudes of the Sun and Stars.

1769 October	Time per Clock of the equal Altitudes of the ☉'s Limbs, and of ✱'s.		Zen. diſtance or points on the limb of the quadt. the nonius was ſet at.	☉'s limb, and Stars obſerved.	Time per Clock when the ☉'s cent. and ✱'s paſſed the merid. from the mean of the Obſervations.
	h ′ ″	h ′ ″	° ′		
☿ — 4	9 44 35	13 45 15	63 36	☉'s upp. limb	
♃ — 5	18 24 1	20 48 2	15 00	α Cygni	
	28 24	43 39			19 36 1,3
	32 49	39 12			
	18 49 52	20 22 10½	12 14	Ditto	
	55 39	20 16 25			
♂ — 10	9 44 48	14 24 28:	67 23	☉'s upp. limb	
	50 48	14 18 30			12 5 1,6
	56 50	Clouds			
	9 51 5			☉'s lower limb	
	57 16				
	10 3 33	14 5 42			
♃ — 12	9 20 33	15 2 3	71 00	☉'s upp. limb.	
	25 40	14 56 53			
	30 49	51 47			
	25 55	14 56 36		Ditto low. limb	12 11 41,0
	31 10	51 25			
	36 26	46 8			
☽ — 23	9 23 7	Cloudy at the time correſponding	68 16	☉'s upp. limb	
	27 46				
	32 25				
	9 28 11				
	32 45				
	37 26½	15 59 39½		Ditto low. limb	
	9 45 16	15 51 45	75 54	☉'s upp. limb	
	50 18	46 40			12 48 52,1
	55 20	41 37½			
	9 50 35	46 24		Ditto low. limb	
	55 42	41 16			
	10 0 50	36 9			

Apparent Zenith Diſtances of the ☉, ☽, and ✱'s.

	☉, ☽, or ✱'s obſerved.	Apparent zen. diſtance on the meridian.			Barom.	Ther.
1769 April		°	′	″		
☽ —— 10	Spica	64	45	24		
20	☉'s upper limb	42	51	00	29 69	52
	Ditto lower limb	43	22	40		
22	Spica	64	45	32		
	Arcturus	34	26	20		
	♃'s center	71	21	36		
	☽'s lower limb	77	30	36:		
	Antares	80	38	40	29 52	42
25	Spica	64	45	16:	20 93	46
26	Spica	64	46	6		
	Arcturus	34	27	00	29 85	52
28	Arcturus	34	27	8:	29 92	49
29	Ditto	34	27	00	30 10	52
30	☉'s upper limb	39	37	40	29 97	60
	Ditto lower limb	40	9	16:		
	Spica	64	46	00		
May 1	☉'s upper limb	39	19	24	31 00	62
	Ditto lower limb	39	51	16		
2	☉'s lower limb	39	33	26	30 20	59
3	Spica	64	46	00		
	Arcturus	34	26	52	30 05	55
	Antares	80	39	12		
4	☉'s upper limb	38	26	16	30 00	56
6	Spica	64	45	50	30 12	48
	Arcturus	34	26	52		
7	☉'s upper limb	37	36	00	29 94	59
	Ditto lower limb	38	7	56		
	Spica	64	45	50		
	Arcturus	34	26	48	29 87	47
	Jupiter's center	70	52	24		

Apparent Zenith Diſtances of the ⊙, ☽, and *'s.

1769		⊙, ☽, or *'s obſerved.	Apparent zen. diſtance on the meridian.			Barom.		Ther.	
			'	'	''				
May	10	Spica	64	45	46				
		Arcturus	34	26	48	29	86	43	In obſerving the ⊙'s zen. diſt. I ſet the ⊙'s limb juſt (or ſcarcely) to touch the wire; which is the reaſon why the ⊙'s diameter is in this obſervation ſo much greater then made before.
	12	⊙'s upper limb	36	17	16	29	60	54	
		Ditto lower limb	36	49	48				
		Spica	64	46	00:				
♄ ——	13	⊙'s upper limb	36	2	42	29	52	58	
		Ditto lower limb	36	34	30				
	14	⊙'s upper limb	35	48	28	29	55	57	
		Ditto lower limb	36	20	2				Obſerved without the dark glaſs; it being a very thick fog.
		☽'s upper limb	55	50	56	29	63	49	
		Spica	64	45	55				
		Arcturus	34	26	52	29	69	44	
	15	☽'s upper limb	60	54	40	29	69	44	
		Spica	64	46	00:				
	18	⊙'s upper limb	34	53	40	29	54	51	
		Ditto lower limb	35	25	12				
		Spica	64	46	00				
		☽'s upper limb	73	30	32				
		♃'s cent.	70	30	20	29	64	37	
	23	⊙'s upper limb	33	53	00	29	22	59	
		Ditto lower limb	34	24	32				
		Arcturus	34	26	52	29	34	55	
	24	⊙'s upper limb	33	41	48	29	41	64	
		Ditto lower limb	34	13	38				
June	11	⊙'s upper limb	31	25	40	29	41	53½	
	12	Ditto	31	22	00:	29	66	55	
		Arcturus	34	26	44				
	14	☽'s upper limb	72	27	14	29	36	55	
	15	⊙'s upper limb	31	13	00	29	46	58	
	17	Antares	80	39	12				
		☽'s upper limb	78	44	48	29	35	47	
	18	⊙'s upper limb	31	7	54	29	41	54	
		Ditto lower limb	31	39	42				

Apparent Zenith Diſtances of the ☉, ☽, and ✱'s.

1769	☉, ☽, or ✱ obſerved.	Apparent zen. diſtance on the meridian.			Barom.	Ther.
		°	′	″		
June 23	☉'s upper limb	31	7	20	29 17	60
	Ditto lower limb	31	39	12		
26	☉'s upper limb	31	12	6	29 38	5
	Ditto lower limb	31	43	56		
30	☉'s upper limb	31	24	6	29 71	60
July 1	☉'s upper limb	31	28	00	29 62	62
5	☉'s upper limb	31	48	00	29 72	67
	Ditto lower limb	32	19	56		
6	Antares	80	39	20	29 75	57
9	☉'s upper limb	32	14	46	29 57	63
13	☽'s upper limb	76	58	16	29 34	57
14	☉'s upper limb	32	56	12	29 49	59
	☽'s upper limb	78	27	10	29 66	56
17	☉'s upper limb	33	25	28	29 12	59
	Ditto lower limb	33	57	26		
22	Ditto	34	53	24	29 49	63
Auguſt 2	☉'s upper limb	36	54	30	29 50	62
17	α Aquilæ	46	33	12	29 69	54
	☽'s upper limb	61	39	20	29 70	51
19	☉'s upper limb	41	56	20	29 40	57
	Ditto lower limb	42	27	56		

To find the Error of the Line of Collimation of the Quadrant.

1769 April ♄—22 I ſet up a board at the diſtance of about 300 yards, painted black, with two white marks on it; the diameter of each white mark = 3½ inches, and the diſtance of their centers 11½ inches = the difference of the height of the center of the teleſcope, when the quadrant is inverted, and made the following obſervations.

	Zen. diſt. of the upp. mark. °	′	″	
	89	50	00	The quadrant in its proper poſition.
		50	6	
			4	
			6	
			0	
			4	
			0	
Mean —	89	50	3	

	Zen. diſt. of the low. mark. °	′	″	
	90	7	20	The quadrant inverted.
		7	20	
			18	
			14	
			16	
			20	
			20	
Mean —	90	7	18,3	
	89	50	3	
	179	57	21,3	
	180	0	0	
		2	38,7	
½ =		1	19,3	To be added to the obſerved zenith diſtance.

☿—26 I took the teleſcope off the quadrant, and adjuſted the line of collimation ſomething nearer.

28 I found the error of the line of collimation of the quadt. in the ſame manner, as on the 22d, thus:

	Zen. diſt. of the upper mark. °	′	″	
	89	51	00	Quadt. in its proper poſition.
		51	00	
		51	00	
		51	00	
		50	56	
		51	4	
		51	6	
		51	6	
		51	0	
		51	6	
Mean	89	51	2--	

	Zen. diſt. of the low. mark. °	′	″	
	90	7	20	Quadant inverted.
		7	12	
			24	
			20	
			22	
			20	
			18	
			16	
			18	
			20	
			12	
Mean =	90	7	18,4	
	89	51	2--	
	179	58	20,1	
	180	00	00	
		2	39,9	
½ =		0	50	To be added to the obſerved zen. diſtance.

N.B. This method is given us by the Rev. Mr. Nevil Maſkelyne, Aſtronomer Royal, in his deſcription of Mr. Bird's aſtronomical quadt. publiſhed with his inſtructions for the obſervation of the late Tranſit of Venus, at the end of the Nautical Almanac of 1769, ſee p. 23, and may be followed with great accuracy; and to avoid the error that may fall on any two diviſions of the quadt. as many different diviſions may be taken as the obſerver pleaſes, by the ſhifting the board that has the marks on it, higher or lower.

For the Latitude of the Obſervatory at Cavan.

	⊙ or ✱'s obſerved	App. zenith diſtances on the merid.	Refra.	⊙'s px. in alt. hor. = 8″,5	✱'s ab. in decl.	✱'s nut. in decl.	Error of the line of colli. of the quad.	True zen. diſtances.	⊙ or ✱'s true decl. at the time of obſervation.	Latitude from each obſervation.
1769 April		° ′ ″	+ ′ ″	—	″	″	+ ′ ″	° ′ ″	° ′ ″	° ′ ″
10	Spica	64 45 24	2 0,5		—7,6	—6,3		64 48 29,6	9 57 00,0	54 51 30
20	⊙'s center	43 6 50	0 53,1	5,8				43 8 56,3	11 42 55,2	51 51
22	Spica	64 45 32	2 2,4		—7,5	—6,2	1 19+	64 48 39,7	9 57 00,5	51 39
22	Arcturus	34 26 20	0 39,7		—5,9	—5,8		34 28 7,0	20 23 33,8	51 41
	Antares	80 38 40	5 41,0		—2,0	—2,7		80 45 35,3	25 53 56,7	51 39
25	Spica	64 45 16::	2 3,0		—7,5	—6,2		64 48 24,3::	9 57 0,6	51 24::
26	Spica	64 46 6	2 0,8		—7,5	—6,2	+	64 48 43,1	9 57 0,7	51 42
	Arcturus	34 27 0	0 39,1		—5,3	—5,8	′ ″	34 28 18,0	20 23 33,6	51 52
28	Ditto	34 27 8	0 39,4		—4,8	—5,8	0 50	34 28 26,8	20 23 33,5	52 00:
29	Ditto	34 27 0	0 39,4		—4,8	—5,8		34 28 18,8	20 23 33,5	51 52
30	⊙'s center	39 53 28:	0 47,2	5,4				39 54 59,8:	14 56 48,5	51 48:
	Spica	64 46 00	2 0,5		—7,4	—6,2		64 48 46,9	9 57 00,8	51 46
May 1	⊙'s center	39 35 20	0 47,9	5,4				39 36 52,5	15 14 57,2	51 50
2	⊙'s L. L.	39 33 26	0 47,7	5,4				39 34 58,3	15 32 50,9	51 55
3	Spica	64 46 00	2 0,7		—7,2	—6,2		64 48 37,3	9 57 1,0	51 36
	Arcturus	34 26 52	0 39,0		—3,8	—5,7		34 28 11,5	20 23 33,4	51 45
	Antares	80 39 12	5 36,0		—2,6	—2,6		80 45 32,8	25 53 57,0	51 36
6	Spica	64 45 50	2 3,1		—7,0	—6,2		64 48 29,9	9 57 1,2	51 29
	Arcturus	34 26 52	0 39,9		—3,2	—5,7		34 28 13,0	20 23 33,2	51 46
7	⊙'s center	37 51 58	0 43,5	5,2				37 53 26,3	16 58 21,2	51 48
	Spica	64 45 50	2 2,4		—7,0	—6,1		64 48 29,3	9 57 1,3	51 28
	Arcturus	34 26 48	0 39,7		—3,0	—5,7		34 28 9,0	20 23 33,1	51 42
10	Spica	64 45 46	2 3,5		—6,9	—6,1		64 48 26,5	9 57 1,5	51 25
	Arcturus	34 26 48	0 40,0		—2,3	—5,7		34 28 10,0	20 23 32,9	51 43
12	⊙'s center	36 33 32	0 41,6	5,1				36 34 58,5	18 16 48,4	51 47
13	⊙'s center	36 18 36	0 48,0	5,0				36 20 1,8	18 31 36,0	51 38
14	⊙'s center	36 4 15	0 40,2	5,0				35 5 40,2	18 46 4,5	51 45
	Spica	64 45 55	2 2,5		—6,5	—6,1		64 48 34,9	9 57 1,7	51 33
	Arcturus	34 26 52	0 39,6		—1,5	—5,7		34 28 14,4	20 23 32,7	51 47
18	⊙'s center	35 9 26	0 39,8	4,9				35 10 50,9	19 40 46,0	51 37
	Spica	64 46 00	2 4,4		—6,1	—6,1		64 48 42,2	9 57 2,0	51 40
23	⊙'s center	34 8 46	0 36,9	4,8				34 10 8,1	20 41 36,8	51 45
	Arcturus	34 26 52	0 38,2		+0,2	—5,6		34 28 14,8	20 23 32,2	51 47
24	⊙'s center	33 57 43	0 36,5	4,7				33 59 4,8	20 52 44,3	51 49
June 11	⊙'s U. L	31 25 40	0 34,0	4,4				31 26 59,6	23 8 38,7	51 26
15	⊙'s U. L	31 13 00	0 33,4	4,4				31 14 19,0	23 21 23,6	51 30

For the Latitude of the Obſervatory at Cavan.

	⊙ or ✱'s obſerved	Ap. zenith diſtanceson the merid.	Refra.	⊙'s px. in alt. hor. = 8″,5	✱'s ab. in decl.	✱'snut. in decl.	Error of the line of colli. of the quad.	True zen. diſtances.	⊙ or ✱'s true decl. at the time of obſervation.	Latitude from each obſervation.
1769		° ′ ″	′ + ″	—	″	″	′ + ″	° ′ ″	° ′ ″	° ′ ″
June 17	Antares	80 39 12	5 34,8		—3,9	—2,4	0 50	80 45 30,5	25 53 58,1	51 32
18	⊙'s center	31 23 48	0 33,9	4,4				31 25 7,5	23 26 37,1	51 45
23	⊙'s center	31 23 16	0 33,2	4,4				31 24 34,8	23 27 5,6	51 40
26	⊙'s center	31 28 1	0 33,6	4,4				31 29 20,2	23 22 25,0	51 45
30	⊙'s U. L.	31 24 6	0 33,8	4,4				31 25 25,4	23 10 26,0	51 38
July 1	⊙'s U. L.	31 28 0	0 33,5	4,4				31 29 19,1	23 6 24,6	51 31
5	⊙'s center	32 3 58	0 33,7	4,5				32 5 17,2	22 46 20,6	51 38
6	Antares	80 39 20	5 31,1		—3,8	—2,3		80 45 35,0	25 53 58,6	51 36
9	⊙'s U. L.	32 14 46	0 34,3	4,5				32 16 5,8	22 19 50,6	51 43
14	⊙'s U. L.	32 56 12	0 36,0	4,6				32 57 33,4	21 38 17,3	51 38
17	⊙'s center	33 41 27	0 36,2	4,7				33 42 48,5	21 8 52,0	51 41
22	⊙'s L. L.	34 53 24	0 38,4	4,8				34 54 47,6	20 12 42,8	51 42
Auguſt 2	⊙'s U. L.	36 54 30	0 41,4	5,1				36 55 56,3	17 40 4,4	51 50
17	α Aquilæ	46 33 12	0 59,5		+7,8	+3,9		46 35 13,2	8 16 25,9	54 51 39
								Mean of the whole		51 40,8

N. B. By comparing Mr. Flamſtead's obſervations with thoſe made by the Rev. Mr. Maſkelyne, Aſtronomer Royal, in the years 1765 and 1766, Arcturus moves annually 2,″0144 Southward in declination: therefore 18″,6 is ſubtracted in the above from the declination of Arcturus, as ſettled from Dr. Bradley's obſervations for the beginning of the year 1760.

The

The following are the difference of R. A. between the ☽'s limb and *'s, obſerved by wires placed in the focus of the eye glaſs of a reflecting teleſcope, that magnified 80 times. The teleſcope was ſupported by a polar axis placed in the meridian, and on a ſtrong ſtand, loaded with weight, which made it keep its poſition very ſteady.

1769 July	Time per Clock.						Difference of R. A. between the ☽'s limbs and *'s.
♃ 20	χ ♑ paſſed the vertical wires in the reflector.			☽'s 2d or Eaſtern limb, paſſed the ſame vert. wires.			
	h	′	″	h	′	″	
	19	39	33	-	-	-	
		39	43	19	43	32½	
		47	13		51	13	
		47	24½		51	25	
		47	36		51	38	
	20	5	11	20	9	35½	
		5	21½		9	48	
		5	34		10	00	
		18	13½		22	57½	
		18	25		23	9	
		18	36			20+	
		18	48			32	
	20	19	00::			44½	
	20	25	17+		30	12	
			28			33½	
			39+			35	
			51			46	
		26	3		30	59	
		33	54		39	2	
		34	5		39	13	
		34	40		39	48	
		41	37		46	56	
		41	48½		47	7½	
	Clouds				47	19	
	Cl.					30½	After theſe, it got ſo hazy that I could not ſee the ſtar.
	20	42	23½		47	42½	

N. B. The * paſſed along the wire parallel to the equator, or moved in a line parallel to the ſaid wire. At the laſt obſervations the * was about 18 or 20′ north of the ☽'s center.

Difference of Right Aſcenſion between the ☽'s Limb and *'s.

July ♀ —21	Time per Clock.					
	☽'s 2d limb paſſed the wires vertical to the equator.			♓ ♒ paſſed the ſame vertical wires.		
	h	′	″	h	′	″
	18	30	3½	18	33	53—
		30	15+		34	3
		39	41+		42	13½
		39	32	-	-	-
		40	4		42	36—
		40	15+	-	-	-
		40	27—		42	59
	18	53	39½	18	55	47
	19	5	7	19	6	58
			18		7	10—
			29½		7	20+
			41½		7	32
		5	53½		7	43+
		10	47		12	27½
		10	59		12	38½
		11	10+		12	49½
		11	21½		13	1
		11	34—		13	12½
	19	17	00	-	-	-
			12—		18	42—
			23		18	52½
			35+		19	4
		17	47		19	16
		22	42	-	-	-
		22	53½	19	24	14
		23	4½	-	-	-
		23	16		24	36½
		23	28+		24	48
		30	18	-	-	-
		30	30½		31	40
		30	42—		31	50
		30	53½		32	1
		31	5½		32	14

July ♀ —21	Time per Clock.					
	♓ ♒ paſſed the wires vertical to the equator.			☽'s 2d limb paſſed the ſame wires.		
	h	′	″	h	′	″
	21	51	4	21	53	27½
		51	15½		53	39+
		51	26		53	50
		51	37½		54	2
		51	49½		54	14
	21	58	39	22	1	14+
		58	50	-	-	-
		59	1		1	36
		59	12+		1	48
		59	24		2	00
	22	5	50½		8	36
		6	1½		8	46
		6	12	-	-	-
		6	24		9	10
		6	36—		9	21
		13	9		16	18
		13	20		16	29½
		13	31		16	41—
		13	42		16	53
		18	14		21	19+
		18	25		21	30½
		18	36—		21	41½
		18	47		21	53
	22	18	59		22	5+
		28	12½		31	32—
		28	23+		31	43+
		28	34½		31	54½
		28	46		32	5
		28	57+		32	18
		37	11		40	43—
		37	22+		40	54½
		37	33+		41	4½
		37	44½		41	17
	22	37	56½		41	29

Immediately after theſe, it began to get foggy.

N.B. In all theſe obſervations the * moved parallel to the equator. At the beginning of the obſervations the * was North of the ☽'s center about 18′.

At 19h.47′ when I left off to take the occultation, the * was but little North of the ☽'s center; by eſtimation 3 or 4′.

The differences of A.R. after the occultation are very accurate, the ☽ being near the meridian, leaving the * nearly in a right line from her center.

Difference of Right Aſcenſion between the ☽'s Limb and ∗'s.

	Time per clock.	
July ♀—21	☽'s 2d limb paſſed the wires vertical to the equator.	χ ♒ paſſed the ſame vertical wires.
	19 33 33½	19 34 38
	33 45+	34 49
	33 56+	35 0½
	34 8	35 12—
	34 20+	35 24—
	41 5+	- - -
	41 16½	42 9
	41 28	42 20½
	41 40—	42 32—
	41 52	42 43+
	46 11	46 56½
	19 46 23+	19 47 8

Left off to take the occultation.

	Time per clock.	
1769 Auguſt ☿—16	☽'s 1ſt limb paſſed the wires vertical to the equator.	A ſtar of the 5th mag. paſſed the ſame vert. wires.
	h ′ ″	h ′ ″
	18 4 30—	- - -
	4 43—	- - -
	4 55	18 25 1+
	5 6	25 12—
	5 18—	25 23

Cloudy immediately after.

A bright ſpot in the ☽ moved along the directing wire, or wire parallel to the equator, and the ∗ followed about 6′ North of ☽'s center.

Difference of Right Aſcenſion between the ☽'s Limb and ✱'s.

1769 Sept. ♀—15	Time per clock. ☽'s 2d limb paſſed the wires vertical to the equator.	Time per clock. 16 Piſces paſſed the ſame vertical wires.	
	19 45 7—	Cloudy	
	19—		
	31		
	42½		
	45 54		
	19 54 17½	19 56 50	The ✱ about 18′ South of the ☽'s center.
	30	56 2—	
	42½	13	
	53	23+	
	55 5	57 34+	
		then cloudy	
	20 29 16½	20 30 44	
	28	30 56	
	40+	31 8—	
	51½	31 19	
	30 3½	31 30	
	34 33+	36 53+	The ✱ by eſtimation 24′ South of the ☽'s center.
	45+	36 5	
	58—	16+	
	35 9	27	
	35 20½	36 38+	
	41 13+	- - -	
	25½	42 33	
	38—	44+	
	48½	55+	
	42 0½	43 7—	
	46 16+	- - -	In theſe the ☽'s center and ✱ nearly at the diſtance of the field of the teleſcope, or as near the ends of the wires as the ☽'s limbs would admit of.
	28+	- - -	
	40	20 47 41	
	51½	47 52	
	47 3½	48 3½	
	50 57—	51 49	
	51 8	52 0	
	51 20½	52 12	
	56 39	57 23	
	56 50+	57 33½	
	57 1½	57 45+	

Note. In all theſe obſervations the ✱ was often tried if it would keep the wire parallel to the equator, after moving it off the wire, and bringing it on again (by means of the vertical ſcrew). For in theſe obſervations I was obliged to bring the ſtar more Southward after I had made it keep the wire, before I brought it back for the ☽; otherwiſe the ☽'s center would not follow through the field of the teleſcope; and I always found that it returned again to keep the wire with great accuracy: the wires very ſeldom wanting any alteration.

Difference of Right Aſcenſion between the ☽'s Limb and *'s.

	Time per Clock.							
Sept.	☽'s 2d limb paſſed the wires vertical to the equator.			16 Piſces paſſed the ſame vertical wires.				
☿—15	h	′	″	h	′	″		
	21	4	14+	The * would not follow through the field of the teleſcope.				
			26—					
			38					
			49					
		5	1					
☿—20	20	24	34	20	26	13		
		24	47+		26	25½		
		24	59½			37—		
		25	12—		26	49		
	20	31	54—	20	33	12½		
		32	6			24—		
		32	18½		33	36		
		37	27—		38	31—		
		37	38½			42½		
		57	51½		38	54+		
	10	42	51—	—	—	—		
		43	4		43	53		
			17		44	5½		
			29—			17		
		43	41—		44	5+		
	20	50	55—		51	23½		
		51	7½		51	35½		
		58	29		58	37		
		58	42		58	50		
		58	56+		59	3		
		59	8		59	14½		
	20	59	21	10	59	26		
	21	1	—	the * 2″ after the ☽'s limb.				Theſe may not be ſo accurate as the above.
	21	2		The ☽'s limb and * equal in A. R. as near as could be judged.				
	21	3	35	The ☽ followed the * 15″ in time.				
	21	7	50	Clouds				
	21	11		Clear				

	Time per Clock.					
Sept.	16 Piſces paſſed the wires vertical to the equator.			☽'s 2d limb paſſed the ſame wires.		
☿—20	h	′	″	h	′	″
	22	23	41	22	27	14
			54			27+
		24	6+			40+
			17+			52
		24	29½		28	4+
		30	47		34	40
		31	1—			53
			13		35	6+
			25			18
		31	37		35	30+
		43	19½		47	42
			33+			54½
			44		48	6½
	22	43	56	22	48	19+
	22	51	32+	22	56	15—
			45½			28
			58			41—
		52	9+			52½
		52	21½		57	5+
	23	2	56—	23	8	7—
		3	9—			20
			22+			32
			33+			44½
		3	45+		8	57
		15	16—		20	55
			29		21	9—

The Star was to move along the equatorial wire in all theſe obſervations, and I look upon the whole to be very good; particularly thoſe after the occultation, as the difference of declination of the ☽'s center and Star was by eſtimation not more than 4 or 5′, nor even ſo much at the laſt obſervations.

Difference of Right Aſcenſion between the ☽'s Limb and ✱'s.

	Time per Clock.					
Sept. ☿ —20	16 Piſces paſſed the wires vertical to the equator.			☽'s 2d limb paſſed the ſame wires.		
	h	′	″	h	′	″
	23	15	41+	23	21	12+
			41+			33
		16	+		21	46—
		48	4		54	58½
			16+	—	—	—
			29+		55	25
	—	—	—			37—
	23	48	53	23	55	48½
	0	3	16	0	10	44½
			28+		10	58
			41		11	11
		3	53—		11	23
	—		—	0	11	35
	n		cloudy			
	☽'s 2d limb paſſed the wires vert. to the equator.			h Leonis paſſed the ſame vertical wires.		
☽ —25	2	52	2	2	54	53
			15½	—	—	—
			28—		55	16½
			39—		55	28+
		52	50½		55	38
	2	58	3—	3	0	41—
			15½		0	52½
			28—		1	4—
			39+		1	15½
		58	51—	3	1	27—
	3	3	54		6	18½
		4	6½			30+
			19—			43
			30			52
		4	42½		7	5
	3	15	10—		17	12
			22+			24
			34½			36+
			45½			47
		15	57+		17	58½

At theſe obſervations the Star followed the ☽'s center along the wire parallel to the equator.

Difference of Right Aſcenſion between the ☽'s Limb and *'s.

	Time per Clock.						
1769 Sept.	☽'s 2d limb paſſed the wire vertical to the equator.			h Leonisa paſſed the ſame vertical wires.			
	h	′	″	h	′	″	
☽—25	3	21	9+	3	23	0	At theſe obſervations the Star followed the ☽'s center along the wire parallel to the equator.
			22			11½	
			34			24—	
			45½			34	
		21	57		23	46	
		27	38½		29	15½	
			51			27	
		28	3			39	
		28	15—			50	
	3	28	26		30	1½	
		34	49½	—	—	—	
		35	2		36	23½	
			14½		36	35	
			25+		36	46—	
		35	37		36	57	
	3	44	Clo.	—	—	—	At theſe obſervations the Star was about 4′ north of the ☽'s center.
	3	55	11	—	—	—	
			24—	3	56	6	
			34			18	
			47			28½	
		55	58		56	40	
		58	29½		59	6	
			42+			18	
			53+			29	
		59	5		59	41	
	Then cloudy						
	4	15		Clear			
	δ ♈ paſſed the wires vertical to the equator.			☽'s 2d limb paſſed the ſame wires.			
Oct.	h	′	″	h	′	″	
☽—16	4	9	18	4	12	10	
		9	31			22+	
		9	44½			36	
		9	55+			48	
	4	10	8	4	13	0½	

Difference of Right Aſcenſion between the ☽'s Limb and *'s.

1769 Oct.	Time per Clock						
	* ♈ paſſed the wires vertical to the equator.			☽'s 2d limb paſſed the ſame wires.			
☽—16	h	′	″	h	′	″	
	4	16	40		19	51—	The * 10′ ſouth of the ☽'s center, and the * paſſed along the middle wire.
		16	52+			4	
		17	4			16½	
			16			28	
	4	17	28		20	40½	
		22	50		26	14	* moved along the lower wire.
			3			27	
			15			40—	
			26			51½	
		23	38		27	4—	
		29	33		23	11	The * moved along the middle wire, after theſe I ſet the wires that the * paſſed exactly along the lower wire.
			46—			24	
			58			37	
			9			59	
		30	21—		34	1	
	4	54	47			21	
			59½			33	
			11½			46+	
			23			57	
		55	35+	5	0	10+	
	5	4	52		9	47+	The * 15′ ſouth of the ☽'s center.
		5	4	—	—	—	
		5	15½		10	11	
	5	5	27	5	10	24	
	5	12	25	5	17	37½	
			38			51—	
			50+			4—	
		13	2			15+	
		13	14		18	27½	
	5	25	46½		30	26½	
		25	59			39:	
		26	11½			51—:	
		26	23		31	2½:	
		26	35		31	16	

Difference of Right Aſcenſions between the ☽'s Limb and ☽'s.

1769 Oct.	Time per Clock.					
	♉ ♈ paſſed the wires vertical to the equater.			☽'s 2d limb paſſed the ſame wires.		
	h	′	″	h	′	″
☽—16	5	38	4+	5	44	13
			17+			26+
			29			40—
			41—		44	51
		38	53—		45	3 :
23				Then cloudy		

	☽'s 2d limb paſſed the wires vertical to the equator.			a ſtar of 6th mag. paſſed the ſame vertical wires			
☽—23	3	39	55½	3	43	16	The ✱ about 6′ north of the ☽'s center.—The wires faintly illuminated and the ✱ alſo appeared very faint.
			8—			28	
			20—			40	
			30½			50	
		40	42+		44	1	
		46	32+		49	40	The wires very indifferently illuminated, and the ✱ ſtill appeared faint.
			45—		49	52	
		46	57		50	6	
		47	8+	—	—	—	
		47	20½		50	27—	
		55	3+		57	55	
			16—		58	7+	
			28—			19	
			38½			29½	
		55	50½		58	41	
	4	1	21½	4	4	1	
	4	53	9½		54	14	
			20+			25	
		53	32$\frac{2}{1}$		54	36—	
	5	1	41+	—	—	—	Theſe Numbers are a little dubious.
		1	54		2	43	
		2	6—		2	55½	
		2	16½		3	6½	
		2	30—		3	18—	

Clouds now began to interrupt the obſervations. Clear a few minutes before the ☽'s limb, and ✱ paſſed the wires at the ſame time: and at

5 32 12 The ☽'s 2d limb and ✱ was equal in right aſcenſion: the ✱ by eſtimation 20′ north of the ☽'s center: then cloudy.

The Tranſit of Venus.

1769 June ♄ — 3	Time per clock h	'	"	In.	Ten.	Non.		
	3	18					Rain	
	3	45					Viewed the ☉'s diſk with the reflector (mag. 128 times), and ſaw nothing more than ſome large irregular black ſpots, with a black ſtreak very near the edge of the ☉'s limb on the Eaſtern ſide.	
				0	35	15	Adjuſtment of the nonius on the ſide of the teleſcope, for diſtinct viſion for the contacts	Mag. 128 times
				0	30	5	Ditto for the micrometer	Mag. 62 times
				0	25	23	Ditto for the wire eye glaſs	
	10	30					Cloudy	
The air not quite clear	11	17	53				The external contact of Venus and the Sun's limb.	
Ditto more denſe		35	30				The contact ſeemed to be formed by judging by their peripheries.	
		36	8				Internal contact, the thread of light broke out.	
				0	1	16	to the right-hand of ☉	Venus's (horiz.) diameter. Thoſe made to the left hand are ſet down where the nonius coincided, the compliment of which to 25 muſt be uſed.
				0	1	8	to the left hand of ☉	
				0	1	13	right	
				0	1	6	left	
	12	12					Cloudy	
				4	0	20		The ☉'s horizontal diameter, hazy.
				4	0	20		
					1	00::		
	12	21					Cloudy	
				0	1	7	to the left-hand of ☉	Venus's diameter.
					1	14	to the right-hand of ☉	
					1	10	left-hand	
							After theſe, I immediately extended the glaſſes again for the Sun's diameter, but was prevented by clouds from doing any thing farther.	
	12	45					Cloudy	
		50					Ditto	

Eclipſes of Jupiter's Satellites, Occultations of the ☽ with the fixed ✱'s, and other Phænomena.

1769	Time per clock			Apparent Time			
	h	′	″	h	′	″	
April 5	1	33	12	13	49	36	Immerſion 1ſt ſatellite of Jupiter.
June 3	11	17	53	6	41	13	External contact of Venus's and the Sun's limb.
	11	36	8	6	59	25	Internal ditto, the thread of light broke out.
	22	49	28	18	11	1	The eclipſe of the Sun began.
July 1	15	43	34	9	20	52	Emerſion 1ſt ſatellite of Jupeter. { Twilight very ſtrong, yet the ſatellites appeared well.
21	20	19	14	12	42	16	Immerſ. ✱ ♒ into the ☽'s enlightened limb.
	21	33	27	13	56	18	Emerſ. of ditto from the ☽'s dark limb.
Sept. 20	21	17	35	10	16	20	Immerſ. of 1ſt ✱ ♉ into ☽'s light limb.
	21	48	54	10	47	35	Emerſ. of ditto from ☽'s dark limb.
	21	57	7	10	55	46,6	Em. of 2d ✱ ♉ from ☽'s dark L. dubious to 3 or 4″.
Sept. 25	4	26	15	17	8	2	Immerſ. of h ♌ into the ☽'s light limb. { Twilight pretty ſtrong, but not to render the obſervation in the leaſt dubious.
Oct. 16	3	50	46	15	23	33	Emerſ. of δ ♈ from the ☽'s dark L. { Immediately after, a very thin flying cloud paſſed over the ☽; but I believe no part of it obſtructed the obſervation.
Nov. 9	23	35	30	9	44	42	19 ♓ immerged into the ☽'s dark limb. The ſecond is true to a ſecond, but which of theſe minutes is true, was rendered dubious by accident.
		or			or		
	23	36	30	9	45	42	
Nov. 21	5	56	40	15	19	50	The ✱ ε ♌ ſeemingly emerged from the ☽'s dark limb, but rendered a little dubious by flying hazy clouds.

Obſervations of the ⊙, ☽, and *'s paſſing the Meridian, made with a Tranſit Inſtrument, the length of the Teleſcope 4 feet, having 2 Object Glaſſes, and magnifying 50 times.

1769
Sept.
♃—21 The tranſit inſtument, ſent by the Royal Society, was brought to Cavan.
☽—25 Began to ſat up the ſaid inſtrument.
♀—29 Examined the line of collimation of the tranſit inſtrument, and found it very much out.
♄—30 Brought it very near, and found the level very good.
Oct.
⊙— 1 Brought the line of collimation quite exact (by many trials), uſing a diſtinct object at the diſtance of about two miles.
☽— 2 At noon cloudy; in the evening it began to clear.

	°	′	″	h	′	″
January 1, 1750, the mean A R. of the Pole * =	10	42	37			
Annual preceſ. 158″ then the preceſ. to this time =	+	52	00			
Aberration in A.R.	+	8	34			
Nutation in A. R.	+	1	30			
Appt. A. R. the 2d of October 1769.	11	44	41	0	46	59
Clock too ſlow for ſidereal time by the obſervations of α Cygni made on the 30th of Sept.				—	56	27
Clock loſes in the interval of time between α Cygni's paſſing the meridian and pole *				—	0	4

Pole * tranſits the meridian, October 2d, at 23 50 28 by the clock.
At this inſtant of time ſhewn per clock, I brought the middle wire to biſect the Pole *, and after took the paſſage of the following *'s over the meridian.

1ſt wire	2d wire	Time per clock of paſſing the meridian.	4th wire	5th wire	
′ ′	′ ″	h ′ ″			
		3 26 10+			Aldebaran
		4 6 54½			Rigel
		4 46 7			α Orion
		5 38 24—			Syrius

Note, Juſt before I brought the wire to the pole *, I ſet the axis of the tranſit inſtrument horizontal by the level; and at 3^h 52′, I examined it again by the level, and found it very exact. In the morning I placed a mark in the meridian about ¾ of a mile North, and took particular notice what natural marks the middle wire cut on the ſummits of two hills, the one North about two miles, and the other South at a greater diſtance; theſe ſerved after as compleat marks in the meridian: and few meridians there are, I believe, of ſuch a length. At firſt, before I could depend upon the inſtrument's keeping its direction all night; I ſent a man to place a candle in the center of the mark placed in the meridian, and it was very ſeldom that I found it vary in the leaſt: what ſmall difference might ſometimes appear, was more probably owing to the placing of the candle, than the movement of the inſtrument.

Obſervations made with the Tranſit Inſtrument.

1769 Oct.	1ſt wire	2d wire	Time per clock of paſſing the meridian.	4th wire	5th wire		
	′ ″	′ ″	h ′ ″	′ ″	′ ″		
♂ — 3		25 0	3 25 46½	26 32	27 18	Aldebaran	
	14	58	4 45 43	46 28	12+	α Orion	
			5 38 00—	45+	39 31::	Syrius	
☿ — 4	Clouds	Clouds	11 43 13::			☉'s 1ſt limb	
			11 46 23—		47 51+	☉'s 2d limb	
	— —	— —	— — —	3 26 10	26 56+	Aldebaran	
	37+	22+	4 6 7+	52—	37	Rigel	
	52	36+	4 45 21½	6+	50½	α Orion	
	3½	50	5 37 37—	22½	39 8½	Syrius.	
♃ — 5	15+	0—	18 37 45½	38 30	15+	γ Aquilæ	
	Clouds	Clouds	Clouds	45 44	28½	α Orion	
	42½	29—	5 37 15½	1	38 47½	Syrius	
♀ — 6			23 49 12	— —	— —	Pole ✱, above the Pole	
		53	3 24 40—	25½	Clouds	Aldeb.	
	53	38—	4 5 23	8—	52+:	Rigel	
	7	51	4 44 36+	21	46 5+	α Orion	
	35 19	5	5 36 52—	38	24	Syrius	
			6 29 5½	29 50	34+	Procyon	
♂ — 10		3 12	12 3 57	— —	— —	☉'s 1ſt limb	Tried the line of collimation and the horizontal poſition of the axis, and found both correct.
			6 7	6 51+	36½	☉'s 2d limb	
	22½	7+	18 35 53	— —	22½	γ Aquilæ	
	38 37	22—	18 40 7—	51	41 36	α Aquilæ	
	— —	22 35	20 23 22—	24 7½	24 54	☽'s 1ſt limb	
			20 27 51	28 37	29 23½	γ Capricorn	
			33 15	34 0—		1ſt C. ditto	
	Clouds		3 23 10½	57—	Clouds	Aldeb.	
☿ — 11		2 46+	4 3 32—	4 16+	— —	Rigel	
		59½	4 42 45—	29	14—	α Orion	
	28—	14	5 35 1—	35 46½	33	Syrius	
	44½	29½	6 27 14½	58½	43	Procyon	
♃ — 12		9 50½	12 10 35	— —	— —	☉'s 1ſt limb	
			12 46—	13 30	14 15	☉'s 2d limb	
	3 1½	3 47—	22 4 33	5 18+	3+	☽'s 1ſt limb	
			4 3 10—	54+	39½:	Rigel	
	Clouds	Clouds	42 23—	7+	43 52—	α Orion	

Obſervations made with the Tranſit Inſtrument.

1769	1ſt wire	2ſt wire	Time per clock of paſſiing the meridian.	4th wire	5th wire		
Oct.	′ ″	′ ″	h ′ ″	′ ″	′ ″		
☿ —13		38 14+	18 38 59½	39 44½	29—	α Aquilæ	
	55 42	5 28—	22 57 14—	57 59	58 44+	☽'s 1ſt limb	
	17½	2½	4 2 48—	3 32	4 17	Rigel	
	31 +	16—	42 1—	45	30—	α Orion	
	45		5 34 17½	3½	50	Syrius	
	1½		6 26 31+	15½	— —	Procyon	
♄ —14			12 19 27+	20 11½	20 56	☉'s 2d limb	Very windy.
	52½	51 39	23 52 26—	53 11+	53 58—	☽'s 1ſt limb	Then cloudy.
☉ —15	19 6+	19 52—	12 20 37+	— —	— —	☉'s 1ſt limb	} windy.
			22 47	23 31½	24 16+	☉'s 2d limb	
	45—	29+	18 38 15—	38 59	39 44	α Aquilæ	
			41 47			ξ Ditto.	
☽ —16	28—	12½	12 23 58			☉'s 1ſt limb	
			26 9—	53+	27 39	☉'s 2d limb	
	36 22	7—	18 37 52	38 36½	39 21	α Aquilæ	
	24+	9—	4 40 54	38½	23	α Orion	
♃ —19	47	35 32	12 36 17½	37 2+	Cloudy	☉'s 2d limb	
	14½	59—	18 36 44	29—	13½	α Aquilæ	
			1 47 22½			α Ceti	
		7+	2 30 56	44+	32½	η Pleiadum	
		2	3 19 49—	20 34½	21 21—	Aldebaran	
		59 48	4 0 33	1 17½		Rigel	
		00½	4 39 46—	40 30	16—	α Orion	
	26	13+	4 58 2	58 50—	38	η Gemini	
	4 28½	16	5 6 5	6 52½		μ Ditto	
	8 48½	9 37+	5 10 27—	11 16+	5—	☽'s 2d limb	
♀ —20	35 59	36 44+	12 37 29			☉'s 1ſt limb	
			39 41½	40 26½	41 11	☉'s 2d limb	
			4 0 11+	59—	1 41—	Rigel	
	0+	45—	4 9 30	10 14+	59—	γ Orion	
		20 18+	5 21 5	51		γ Gemino	
	11 1	11 49	6 12 38	13 26+	14 14+	☽'s 2d limb	
	22 24	8+	6 23 53+	24 38—	22	Procyon	
	6 29 10	Clouds				Pollux	

Obſervations made with the Tranſit Inſtrument.

1769 Oct.	1ſt wire	2d wire	Time per clock of paſſing the meridian.	4th wire	5th wire		
	″	″	h ′ ″	′ ″	′ ″		
♄—21	56 17+	57 2½	22 57 49::	Cl.	Cl.	γ Pegaſi	
	Cl.	Cl.	3 19 4	Cl.	Cl.	Aldeb.	
	Cl.	- - -	Cl.	39 45+	Cl.	α Orion	
☉—22	- - -	24 53	18 35 38	36 23—	7+	α Aquilæ	
	21 39	22 23+	6 23 8+	53—	24 37	Procyon	
	- -	- - -	- - -	6 28 57—	28 47:	Pollux	
	4 35+	5 22	8 6 8½	6 54½	7 41	☽'s 2d Limb	
			8 51 57+	52 42½	28	Regulus	
☽—23	46 16	47 1	12 47 46½			☉'s 1ſt Limb	
			49 59—	50 44	51 29+	☉'s 2d Limb	
	45+	34 30—	18 35 15	59+	44+	α Aquilæ	
♂—24	54½	39	6 22 24	8		Procyon	
		30½	6 26 21+	11½		Pollux	
	10 30½	18+	7 12 5	12 52	13 39	Saturn's center	
	49 40+	26	8 51 12—	57	42½	Regulus	
	46 23	47 8	9 47 54	48 39	Clouds	☽'s 2d Limb	
☿—25	53 10+	55+	12 54 41½			☉'s 1ſt Limb	
			Clouds	Cl.	57 39+	☉'s 2d Limb	
	33 00	45—	18 34 30—	14+	59—	α Aquilæ	
			10 Examined the line of collimation, and axis with the level, and found both very good.				
♃—26	15 38½	25—	3 17 11½	17 57	43½	Aldeb.	From this time to the fourth of November cloudy, and rain.
Nov. ♄—4		29 12+	13 29 59			☉'s 1ſt Limb	
			32 14—	32 59½	45½	☉'s 2d Limb	Hazy, the limb appeared faint.
	10 40	11 28½	18 12 17+	13 7	14 54	☽'s 1ſt Limb	
	16	30 0½	18 30 46—	30½	32 15	α Aquilæ	
	Great rains in the night.						

Obſervations made with the Tranſit Inſtrument.

1769 Nov.	1ſt wire	2d wire	Time per clock of paſſing the meridian.	4th wire	5th wire	
	′ ″	′ ″	h ′ ″	′ ″	′ ″	
☉ — 5		35 4	13 35 50½	36 36½	Cl.	☉'s 2d limb
		38½	18 30 24—	8½	53	α Aquilæ
		58 8	18 58 54½	59 40		2 β Capricorn
	0 42	1 29+	19 2 17+	3 4½	3 52	☽'s 1ſt limb
			19 13 20—	14 6—		N°. 439 zodiac, de la Caille
			19 18 25½			Teleſcopic ſtar a little N. of the fore-going one.
			19 31 3	31 47½		μ Aquarii
	Cloudy all the morning part.					
☿ — 8	Tried the line of collimation, and the horizontal poſition of the axis, and found both exact.					
			11 46 48	47 32+	48 16½	Venus's center
♃ — 9	46 37—	23	13 48 10			☉'s 1ſt limb
			50 26	51 12+	58½	☉'s 2d limb
		28 10	18 28 55½	29 40	24½	α Aquilæ
	7 17—	8 1½	20 8 46+	31—	15+	β Aquarii
	20 44	21 29—	20 22 14	58½	23 43+	ε Pegaſi
			22 17 27			ν Piſcium
	18 29+	19 15	22 20 0½	20 46	21 31	☽'s 1ſt limb
		23 13	22 23 58—	24 42		19 Piſcium
♀ — 10	50 17	51 4	13 51 51			☉'s 1ſt limb
			54 7	53½	40—	☉'s 2d limb
	4—	48+	18 28 34—	18	3—	α Aquilæ
	40 46—	41 31½	21 42 17½	3—	43 48+	α Pegaſi
	11 28—	12 13½	23 13 0—	46—	14 31+	☽'s 1ſt limb
	52½	51 37½	3 52 23—	7—;	53 52—	Rigel
	0 12+	0 56½	4 1 41	2 26—	10	γ Orion
	6½	51—	4 31 36	32 20+	33 5	α Orion
♄ — 11	42—	26+	18 28 12—	56+	41—	α Aquilæ
☉ — 12	40 50½	41 39+	0 42 28—	15+	44 3—	α Arietis
	8 15+	9 3	1 9 51½	10 39—	11 26+	☽'s 1ſt limb
		13½	2 22 2	22 50		η Pleiadum
	9 22	10 8	3 10 55—	40	27—	Aldeb.

Obſervations made with the Tranſit Inſtrument

1769	1ſt wire	2d wire	Time per clock of paſſing the meridian.	4th wire	5th wire		
Nov.	′ ″	′ ″	h ′ ″	h ′ ″	h ′ ″		
♂—14		8 13—	14 9 00—	Clouds	10 33	☉'s 2d limb	
	25 36	21—	18 27 6	51—	35	α Aquilæ	
	Clouds	Clouds	Clouds	Clouds	0 43 20	α Arietis	
	39—	25	3 10 12—	10 57+	11 43+	Aldebaran	
			3 15 55—	42½		τ Tauri	
	22 36	23 25½	3 24 15+	25 5—	25 54—	☽ 2d limb.	
☿—15	8 53+	9 40	14 10 27+			☉'s 1ſt limb	
			12 45—	13 31+	14 18	☉'s 2d limb.	
♃—16			14 16 31	17 17	4	☉'s 2d limb	
		40 12—	0 41 00	41 48—	42 36—	α Arieties	
	54½	40½	3 9 27	13—	10 59—	Aldebaran	
	54½	39—	4 29 24—	8+	53	α Orion	
	9 32½	10 19	5 11 5+	11 51	37½	γ Gemino	
	36 24—	37 13::*	5 38 1+	38 50	39 39—	☽'s 2d limb	* Occaſioned by a fluttering more than common.
	The poſition of the inſtrument in the morning was about a ſecond (in the equator) too much Eaſtward for Stars to the South of the Zenith.						
♀—17		39 50+	0 40 38+	26+	42 14	α Arietis	
	7 33½	19	3 9 6—	51½	37½	Aldebaran	
	12 2½	47	6 13 32—	14 16	Clouds	Procyon	
	38 31+	39 19+	6 40 7+	40 54½	41 42½	☽'s 2d limb.	
♂—21	37 33—	38 21—	0 39 9	57	44½	α Arietis	
	6 4—	6 50—	3 7 36+	22	8	Albebaran	
		48	4 27 33	17½	2½	α Orion	
				10 4 0½	4 45	e ♌	
	10 1½	10 47	10 11 33—	12 17½	13 3	☽'s 2d limb.	
☿—22	58 10	58 56	10 59 42	0 27+	1 13+	☽'s 2d limb	
	Clouds	Cloudy	Clouds	12 50 17	12 51 4	Arcturus.	
♃—23	2 ½	40 9—	14 40 57—	44		☉'s 1ſt limb	
		28	43 16	44 3	50+	☉'s 2d limb	
	22 17	1½	18 23 47	31+	16+	α Aquilæ.	

Obſervations made with the Tranſit Inſtrument.

1769	1ſt wire	2d wire	Time per clock of paſſiing the meridian.	4th wire	5th wire	
Nov.	′ ″	h ″	h ′ ″	′ ″	′ ″	
♀ —24			12 48 45½	49 32½	50 20—	Arcturus.
☽ —27 ♂ —28	Packing up the Inſtruments.			Tried the line of collimation, and found it good.		
Dec. 7	Sent off the Inſtruments for Dublin.					

Charles Maſon.